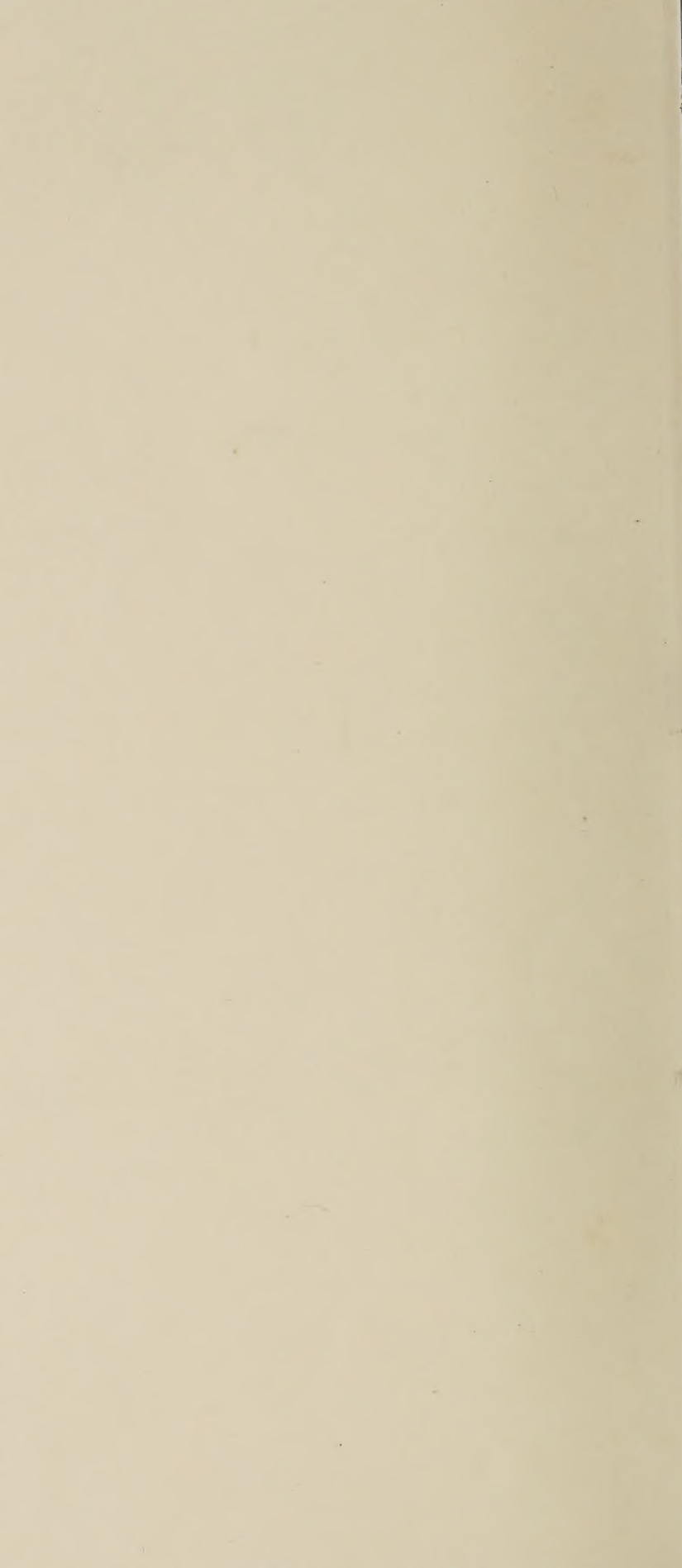


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United States Department of Agriculture  
Agricultural Research Service

# Plant Scientists

in the Agricultural  
Research Service



## Plant Scientists in the Agricultural Research Service

Science and technology offer the best hope for our farmers to be able to continue feeding their fellow citizens.

Researchers continue to participate in imaginative experiments aimed at overcoming present biological limits to food production. When problems of land or water, plants or animals, or food, clothing, and shelter are involved, finding solutions to them calls for agricultural scientists.

Photosynthesis seems to hold the key to making the earth more productive. We must learn to make our plants more efficient at capturing solar energy. To do this, ARS scientists are studying all aspects of plant growth—genetics, plant physiology, pest management, and photosynthesis. A microcomputer controlled system will permit scientists to test and study whole-plant responses to climate and environment.

Most of the plants and crops of the United States originated in other countries. Among the ornamental plants found and brought to this country are the Japanese cherry tree, Zoysia lawngrass, and scores of rhododendrons and azaleas. Today Agricultural Research Service (ARS) plant explorers still search the world for new crop plants or for germ plasm to improve our own varieties. The Bradford pear tree, brought from China for fruit breeding, is one of our best decorative trees for street planting.

ARS scientists have helped develop two excellent new potato varieties for the eastern United States which combine favorable processing characteristics with high quality, good yield, and multiple pest resistance.

Scientists have developed new pyracantha varieties which are resistant to fireblight and tolerant to cold.

Breeding plants for resistance or tolerance to diseases, nematodes, and insects is a persistent task. Plant breeders are constantly redesigning and improving crops. Through painstaking research, geneticists, agronomists, and horticulturists identify and select the best features from thousands of plants and then combine them to make valuable new varieties.

Plant scientists continually conduct research for safe and effective ways to do away with weeds, whether they grow in the cultivated crops, grazing lands, or your own lawn.

Plant physiologists of ARS have found that plant germination, growth, flowering, reproduction, and dormancy all depend on the color and intensity of light that falls on the



plant and that these responses can be altered by changing the plant's exposure to light. They have found that many plant responses also can be triggered by treatment with chemicals that regulate plant growth. Light management, growth regulators, and other practices developed by ARS plant scientists have made crop production easier and less expensive.

Vast collections of plants at the National Arboretum in Washington, D.C., furnish ARS plant breeders with a pool of characteristics they can use in custom breeding new kinds of ornaments.

A Plant Stress Laboratory is located at Beltsville, Maryland, where ARS scientists conduct research to better understand how environmental factors such as air pollution, mineral toxicity, heat, cold, and drought affect plants, and how environmental stress can be prevented or repaired.

Plant Scientists at the Salinity Laboratory in Riverside, California, are searching for salt-tolerant crops. They want to learn the mechanism of salt injury to plants and the physiological basis of salt tolerance. Salt accumulates in the soil and eventually prevents plant growth unless something is done about it.

### **For Research in the Plant Sciences, ARS Employs:**

#### **Agronomists:**

ARS agronomists perform research on breeding, production, and culture of aquatic, field, and horticultural crops; on relationships of plants and soil; on conservation crop and turf establishment; on management of propagation and seed production; on plant adaptation varietal testing; and on weed control.

#### **Botanists:**

ARS botanists perform research in taxonomy and nomenclature of plants; identification and description of plants and seeds; plant distribution and habits of growth; histochemistry of plants, fruits, and vegetables. They also prepare revisions and monographs of plant groups.

#### **Plant Ecologists:**

ARS plant ecologists perform research on the climatic, edaphic, biotic, and other environmental and ecological factors affecting plant growth and development; crop plant populations and spacing in relation to cultural practices and yield quality; effects of light, temperature, moisture, and nutrients on plant competition, growth, and development.



**Horticulturists:**

ARS horticulturists perform research in breeding, testing, propagation, culture and postharvest physiology of fruits, vegetables, flowers, ornamental trees and shrubs; and related problems of production, storage, and handling.

**Nematologists:**

ARS nematologists perform research in effects of nematodes on production and plant growth; distribution and spread; enemies, diseases, and other natural controls; cultural, rotational, chemical, and therapeutical control; taxonomy, physiology, and relationship to plants and soil.

**Plant Geneticists:**

ARS plant geneticists perform research on inheritance and interaction of genetic characters, their environment, and basic physiological principles; development of more effective breeding methods and selection procedures; possible use of induced polyploidy and irradiation in crop improvement; and cytogenetics and cytotaxonomy of plants.

**Plant Pathologists:**

ARS plant pathologists perform research on plant diseases caused by parasitic or non-parasitic micro-organisms and viruses; life cycles of disease-producing organisms; host-parasite relationships; effects of diseases on culture, harvest, transportation, and storage of plants; techniques of producing artificial epiphytotics of various diseases and methods for disease prevention and control.

**Plant Physiologists:**

ARS plant physiologists perform research on physiological processes in plants, including photosynthesis, respiration, mineral element nutrition, water relations, absorption, and translocation; effects of light, temperature, moisture, and edaphic factors; effects of chemicals on plant growth; effects and nature of plant growth regulators; physical properties and chemical composition and their relation to soil and atmospheric environment; maturity, ripening, storage life and quality of plants and plant parts. Basic research of this type is located in well equipped research centers across the country, oftentimes on major university campuses.



## **Qualifications**

Plant scientists with bachelor's degrees in appropriate subjects are usually appointed at GS-5 and GS-7; those with master's degrees at GS-9; those with doctorates at GS-11. For positions above GS-11, progressively responsible research experience is required. ARS places special emphasis on the recruitment of well-qualified scientists with graduate training, preferably through the doctorate level.

## **Employment Information**

The positions are in the Federal civil service and are filled through competitive examinations, which are based on an evaluation of your education, training, and experience. Appointments are based on qualifications without regard to race, color, religion, nondisqualifying physical handicap, sex, age, or national origin.

For additional information, announcements, or application forms, write to:

United States Department of Agriculture  
Agricultural Research Service  
Personnel Division  
Building 003, BARC-W  
Beltsville, MD 20705

## **Work Locations**

Plant scientists are employed throughout the United States.

## **Professional Growth and Recognition**

- Challenging problems.
- Modern research facilities, equipment, and instruments.
- Stimulating scientific environment.
- Collaboration with outstanding scientists.
- Scientific seminars and training programs.
- Individual specialization and recognition.
- Authorship for original research.
- Incentive and honor awards.
- Advanced training opportunities.



## **Career Benefits**

Regular salary increases.  
Promotions based on scientific achievement.  
Liberal vacation and sick leave.  
Low-cost health and life insurance.  
Excellent retirement system.

## **Additional Opportunities May Be Available in:**

Summer assignments for graduate and undergraduate students, postdoctoral fellows, and university professors and instructors.

Special assignments for research associates and professors on sabbatical leave.



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